disturbances are at the worst slight and transitory. He quotes some confirmatory figures from Scandinavia and Germany. Evidence seems to be accumulating that sterilization and castration are of value when applied with great discretion in suitable cases. Obviously, good judgement and experience in their use are of the greatest importance. This country, with its long tradition of personal liberty, is perhaps more reluctant than any other to adopt such a method; and, so far as we can judge, public opinion does not yet believe that any authority, however competent, is fit to decide that a person, however sexually deranged, should be deprived of sexual or reproductive capacity.

THE BERGER RHYTHM

The elucidation of this peculiar phenomenon, first described by Berger, is still in progress, and although we are yet far from clear on its essential significance, it will be of interest to consider the two main views at present held. By the Berger rhythm is meant a characteristic oscillation of electric potential on the surface of the head; the period of this oscillation is 10 per second, and the amplitude is from 0.05 to 0.1 millivolt when the subject is at rest with the eyes closed. This rhythm is recorded with the oscillograph and disappears when the eyes are opened or when, the eyes being closed, the attention is fully concentrated by some activity other than visual. Berger showed that these regular potential waves originated in the brain, and thinks that the whole cortex is involved; he considers that the whole cortex, when active, gives rise to a potential rhythm of 10 a second, and that the disappearance of the rhythm when the eyes are opened is due to an inhibitory effect arising from the excited visual area in the cortex. According to this hypothesis the Berger rhythm is to be looked upon as due to a spontaneous rhythmic discharge from the whole cortex subject to disturbance or inhibition from areas of specialized activities in the cortex. The fact that the rhythm disappears entirely during deep sleep or narcosis supports the view that it is somehow related to general neuronic activity, but it may be necessary to adopt a different attitude in explanation of the rhythm in waking life. The hypothesis put forward by Adrian and his co-workers is that the Berger rhythm is a spontaneous discharge from a large group of neurones in the occipital lobe, and that this group is mainly concerned with vision. It is conceived that when the eyes are closed these neurones are relatively undisturbed and so become free to beat in unison at their natural period; when the eyes are opened, however, the different units must work at different rates, and a synchronous beat is no longer possible. In the most recent of his contributions to this subject Adrian,[1] with K. Yamagiwa, points out that the potential changes are more marked over the occipital lobe than over the frontal; that no stimulus is so effective in abolishing the rhythm as vision; that a rhythm of potential waves with the same general distribution over the head can be induced by a flickering source of light, the frequency now becoming that of the flicker; and that the focus of the rhythmic activity may shift over a fairly wide area at the back of the head. This latter fact was elicited by simultaneous records from different points on the head, and by finding that changes of phase took place from time to time. The position of the focus of activity at any one time can be approximately determined, at all events on the surface of the head, by taking simultaneous oscillograph records from several groups of two points. As long as the records are from points on the up grade to the focus, all the Berger rhythm will be in phase, but if the focus falls in one of the chosen two-point sections there will be a reversal of phase. From a large number of records obtained in this way the conclusion was drawn that the potential gradient on the scalp comes to a focus at about 13 inches from the nasion on the nasion-inion line. By similar studies of potential distribution on the lateral aspect of the skull, it was concluded that the focus of activity on either side shifts about in an area extending laterally for two to two and a half inches, and upwards from the inion for about two inches. That the phenomenon is due to cortical potentials was shown by demonstrating on a cadaver a similar potential distribution on the skull surface when a source of oscillating potential was placed inside the skull. This artificial source of potential could be located with relatively greater accuracy by using the simultaneous record technique. Thus Adrian has strengthened his view that the Berger rhythm arises from some state of activity in the occipital region of the cortex. But it must be pointed out that the hypothesis that the rhythm is abolished on opening the eyes because the excitation in the occipital region would then not be uniform, and so the necessary synchronism would be lost, is still merely a hypothesis. And, indeed, Adrian states that the alternative view that opening the eyes causes a direct inhibition of the whole active area cannot be altogether ruled out, though such a direct effect seems unlikely. Adrian's views on the synchronization of neuronic potentials seem particularly applicable when we consider such phenomena as epileptiform convulsions. Berger has recently shown that in these convulsive states the large potential waves which travel over the cortex can be readily detected through the skull, and it would seem that these are due to abnormal degrees of synchronization. It will be of great interest to see if a desynchronizing mechanism can be found for epilepsy like that for vision for the Berger rhythm.

[1] *Brain*, 1935, lviii, 323.

DISINFECTANT ACTION OF WINE

W. Dietze has carried out a number of experiments to find out whether wine can be relied upon, as is stated by certain observers, to destroy pathogenic organisms in water.[1] The general technique was to add 0.5 c.cm. of a twenty-four-hour broth culture of the organism to be tested to 10 c.cm. of the wine, and to make subcultures at intervals into a suitable nutrient medium, using three loopfuls of a 3 mm. diameter loop. Several different organisms were used, but it will suffice to describe the results obtained with the typhoid bacillus. Preliminary experiments with alcohol showed that typhoid bacilli were destroyed by exposure to 50 per cent. alcohol in half a minute, to 40 per cent. alcohol in under five minutes, to 30 per cent. alcohol in about one hour, to 20 per cent. alcohol in between five to twenty-four hours, and to 10 per cent. alcohol in

[1] *Zentralbl. f. Bakt.*, IIte Abt., January 3rd, 1936.

between two and three days. Five wines were chosen. Four of them were white—namely, Dackenheimer, Wachenheimer, Scharzberger, and Schlosz Vollradser—and one of them was red—namely, Büdesheimer. Their alcohol content varied by volume from 8.33 to 11.31 per cent., their total acidity in grams per litre from 5.40 to 10.05, and their *p*H from 2.78 to 3.49. A considerable difference was observed between the disinfectant action of the five wines. Typhoid bacilli were killed by the pure wine in fifteen to forty-five minutes, by wine diluted with an equal quantity of water in one and a half to two and a half hours, and by a mixture of wine and water in the proportion of 1 : 3 in three and a half hours to two days. The red wine, which had the highest alcohol content but the lowest H-ion concentration—that is, highest *p*H—was the least active. Comparisons of these results with those obtained in the preliminary experiments with alcohol showed that in general the disinfectant activity of the wines was about three times as great as could be accounted for by their alcohol content. This indicates that the acid of the wine must have played a considerable part in the destruction of the bacteria. In practice the final outcome is probably determined by the joint alcohol and acid concentrations. It would appear that the disinfectant action of ordinary Rhine wine is not very high, but it must be remembered that in practice water would rarely contain such a large number of typhoid bacilli as was used in these tests. The conclusion seems to be that, if wine is to be used for sterilizing a doubtful water supply, the mixture had better be made after breakfast if it is to be reasonably safe by lunch time.

PARATHYROIDECTOMY FOR ANKYLOSING POLYARTHRITIS

The beneficial effects which have followed the operation of parathyroidectomy in osteitis deformans have led surgeons to try the same procedure for the relief of what is described as ankylosing arthritis. Oppel was the first to claim satisfactory results for this method of treatment, and recently Fédoroff has published notes of 121 cases from the Clinique Oppel in Leningrad: of these, eighty-four had reported at intervals after the operation varying from six months to ten years ; the remaining thirty-seven could not be traced. Amelioration from the time of the operation to the date of reporting was experienced by thirty-nine patients ; the disease had ceased to progress in a further nineteen, and seventeen were worse. Nine had died since the operation from causes not connected with it. The nature of relief following the operation was lessening of muscular stiffness ; no effect upon the actual ankylosis is claimed. The calcium content of the serum was raised above 11 milligrams per cent. in forty-eight cases. If, however, we accept Schelling's observations, the upper limit of normal is 12 mg. per cent., and at this level only twenty-five of Fédoroff's cases can be taken as showing hypercalcaemia. All but ten patients were cases of ankylosing spondylitis, and other forms of spondylitis were excluded ; this precaution had not been taken in some other reports, which include conditions definitely not of this type. The results claimed cannot be regarded as convincing, and more proof is required that the serum calcium in ankylosing spondylitis is raised above normal: some observers deny that this is so. Bauer says that transient elevations of serum calcium may be due to failure to obtain fasting blood samples or to errors in technique. He found no changes in either calcium or phosphorus content of the serum in rheumatoid or osteo-arthritis of a degree to justify a diagnosis of parathyroidism, but Fédoroff's cases should not be classed in either of these categories. Compère, however, states that Bauer and his colleagues found a positive calcium balance in every case of ankylosing polyarthritis. On the other hand, Funsten states that " arthritis " is very common in parathyroid disease. Criticism is forthcoming from another aspect: in two out of three patients operated on by Leriche no parathyroid tissue was found in the material removed, but all showed hypercalcaemia and were subjectively improved by the operation ; the third relapsed six months after the operation, and later equal improvement was obtained by parathyroid hormone therapy. Ssamarin failed to find parathyroid tissue in many of the cases operated on by Oppel, but improvement in these was comparable with that in cases where definite parathyroid tissue was found. Improvement may be due to anaesthesia, to rest in bed, possibly to a desensitizing shock effect, or to the natural remissions which are characteristic of the disease. It is obvious that a careful study of calcium and phosphorus metabolism in ankylosing forms of arthritis needs to be made and not merely isolated tests of calcium in serum ; greater care in nomenclature is also required. Ankylosing polyarthritis must not be classed loosely with rheumatoid or osteo-arthritis: there are important differences. The latter point is well illustrated by Nachlas, who describes " arthritis " as a variety of diseases which differ not only in their pathology but also in their aetiology: the sole common denominator is their visible point of attack—namely, joint surfaces. At present, parathyroidectomy in any form of arthritis is a matter for research and skilled investigation, and must not be looked upon as a proved method of treatment.

Dr. Cecil Price-Jones will deliver the eleventh biennial Sydney Ringer Memorial Lecture, on " The Sizes of Red Blood Cells," in the lecture theatre of University College Hospital Medical School on Friday, February 28th, at 5 p.m., with Sir Robert Muir in the chair. The lecture is open to practitioners and medical students.

In compliance with the terms of a gift under the will of the late Francis Amory of Beverly, Massachusetts, the American Academy of Arts and Sciences offers a prize for outstanding work with reference to the alleviation or cure of diseases affecting the human genital organs, to be known as the Francis Amory Septennial Prize. The prize may be awarded to any individual or individuals for work of " extraordinary or exceptional merit " in this field. In case there is work of a quality to warrant it, the first award will be made in 1940. The total amount of the award will exceed ten thousand dollars, and may be given in one or more awards. It rests solely within the discretion of the Academy whether an award shall be made at the end of any given seven-year period, and also whether on any occasion the prize shall be given to more than a single individual. While there will be no formal nominations, and no formal essays or treatises will be required, the committee invites suggestions, which should be made to the Amory Fund Committee, care of the American Academy of Arts and Sciences, 28, Newbury Street, Boston, Massachusetts, U.S.A.